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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,822	12/29/2003	Haim Niv	357/03772	7173
44909	7590	08/10/2006		EXAMINER
				BARKER, MATTHEW M
			ART UNIT	PAPER NUMBER
				3662

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/748,822	NIV, HAIM	
	Examiner Matthew M. Barker	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08 May 2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 4,12,14,15,25,31-33,35,36,45-52 and 55-58 is/are withdrawn from consideration.
- 5) Claim(s) 41-43 is/are allowed.
- 6) Claim(s) 1-3,5-11,13,16-19,26-30,34,37-40,53 and 54 is/are rejected.
- 7) Claim(s) 7,20-22,24,26,34,40 and 44 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Claims 4, 12, 14-15, 25, 31-33, 35-36, 45-52, and 55-58 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention or species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/8/2006.

***Drawings***

2. The drawings are objected to because Figures 9, 10, and 20 are missing labels and units of measure on the axes. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 1218. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because it is not in narrative form and contains legal phraseology. Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities:

Page 1, line 25 is missing a period after "sun".

Page 3, line 32 is missing a period after "cell".

Page 14, line 32 should read --port 813--.

Page 23, line 28 should read --plane 1608--.

Appropriate correction is required.

### ***Claim Objections***

7. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

8. Claim 7 is objected to because of the following informalities: the term "sky-line" in line 2 should read --skyline--.

9. Claim 24 is objected to because of the following informalities: claim 24 recites the limitation "the upper and lower contours" in line 2. There is insufficient

antecedent basis for this limitation in the claim. Appropriate correction is required.

10. Claim 26 is objected to because of the following informalities: claim 26 recites the limitation “the differences in Doppler shift” in line 2. There is insufficient antecedent basis for this limitation in the claim. For examination, the claim has been read as dependent on claim 26. Appropriate correction is required.

11. Claim 34 is objected to because of the following informalities: line 2 contains a typographical error, “or”. Line 3 is grammatically incorrect; “determining *the* azimuth of a wire’s reflection point” (emphasis added) is suggested. Appropriate correction is required.

12. Claim 40 is objected to because of the following informalities: claim 40 recites the limitation “the elevation plane” in line 2. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

13. Claim 44 is objected to because of the following informalities: line 2 contains a typographical error, “or”. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 16-19 and 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 16-19, it is unclear what "the opposite side of the aircraft's line of flight" as found in claim 16, lines 2-3 refers to. The claims fail to set forth a first side of the line of flight, and the specification also fails to explain what is meant by the "opposite side".

Additionally, claim 16 recites the limitation "the range-Doppler cell of interest" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Due to the indefiniteness of claim 16, a no meaningful search for claims 16-19 is possible.

Regarding claims 29 and 30, claim 29 recites the limitation "one of ambiguous indications" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1, 2, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by DeBell (5,847,673).

Regarding claims 1 and 2, DeBell discloses a method of obstacle detection for aircraft including transmitting a non- scanning beam that illuminates terrain and obstacles, receiving the claimed Doppler shifted signal, determining the angle between the line of flight and scatterers, determining the range of the scatterers, and determining one of the azimuth, elevation of the scatterers by direction finding, and calculating the other (see Figure 4 and column 3, lines 34-49).

Regarding claim 53, DeBell discloses the claimed apparatus (Figure 5), including a transceiver (30), and claimed processor and computer (40).

### ***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 2 above, and further in view of Barton (NPL).

DeBell does not explicitly disclose using the claimed off-axis monopulse azimuth estimation scheme, however such a scheme is taught by Barton in the

submitted NPL documents (page 421), and described as "old" (page 529).

Therefore, it would have been obvious to use the claimed estimation scheme in the method of DeBell in order to achieve conventional advantages such as reduced error with no new or unexpected results.

20. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Katoh et al. (5,339,085).

Regarding claims 5-8, DeBell does not disclose details of a display, however one of ordinary skill in the art would recognize that the data acquired by DeBell could be visually presented to a user. Katoh discloses a three dimensional terrain map in which the backscatter intensity of cells defined by different values of azimuth, elevation, and range is expressed. Katoh also discloses generating and displaying skyline contours based on cells defined by different values of azimuth, elevation, and range, and displaying backscatters that are at a lower elevation and lower range than the skyline (See Figure 6 and column 1, line 39- column 2, line 9). It would have been obvious to modify DeBell to include a display as taught by Katoh in order to provide the operator with a visualization of the surroundings, helping to prevent collision during times of low visibility.

21. Claims 7-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Foral (3,369,231).

DeBell does not disclose details of a display, however one of ordinary skill in the art would recognize that the data acquired by DeBell could be visually presented to a user.

Regarding claim 7, Foral discloses an airborne obstacle avoidance system, including generating and displaying skyline contours based on cells defined by different values of azimuth, elevation, and range (See Figure 4 and column 1, lines 13-16).

Regarding claim 8, Foral displays backscatters that are at a lower elevation and lower range than the skyline (See Figures 3-4).

Regarding claim 11, Foral discloses the claimed visual warnings (column 1, lines 39-42).

It would have been obvious to modify DeBell to include a display as taught by Foral in order to provide the operator with a visualization of the surroundings, helping to prevent collision during times of low visibility.

22. Claims 9 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell in view of Katoh or Foral as applied to claim 7 above, and further in view of Waruszewski, Jr. (5,086,396).

DeBell as modified does not include the claimed safety circles, however it is well known in the art to include position markings on a aircraft display, as shown by Waruszewski, Jr. (Figure 5 and column 5, lines 28-40). It would have been obvious to further modify DeBell to include markings as taught by Waruszewski, Jr. or obvious variants such as squares or circles in order to help the pilot prevent collision with terrain.

23. Claims 13, 37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Boles (4,546,354).

Regarding claim 13, DeBell does not explicitly disclose the claimed use of Doppler filters, however it is well known in the art to use Doppler filters as claimed to determine the Doppler shift and angle, as shown by Boles (column 5, line 1- column 6, line 4).

Regarding claim 37, Boles discloses the claimed summing of Doppler filter results (column 9, lines 5-9). It would have been obvious to include the analysis as taught by Boles as the method of determining the angle in DeBell in order to achieve conventional advantages with no new or unexpected results.

Regarding claim 38, it would have been obvious to refrain from summing results from sectors closer to the line of flight, as the sectors are already large enough to provide sufficient information to calculate the angle, and further calculation would be wasteful. It is further noted that this practice is disclosed as "well-known" in the present specification (paragraph 0165).

24. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above.

DeBell does not explicitly disclose resolving an elevation ambiguity by a pull-up or push-down maneuver. However, it would have been obvious to

perform a pull-up maneuver in the method of DeBell in the event of an elevation ambiguity in order to avoid potential collision.

25. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Lightfoot (4,746,924).

Regarding claim 26, DeBell does not explicitly disclose the claimed separation of ground reflections from object backscatter. However, it is well known to separate target returns from clutter. This is demonstrated by Lightfoot discloses the claimed Doppler filtering (column 12, lines 48). It would have been obvious to separate ground reflections from object backscatter based on the Doppler shift between the backscatter and ground reflections in order to achieve conventional advantages such as a clutter-free signal with no new or unexpected results.

Regarding claim 28, while DeBell nor Lightfoot explicitly disclose pointing a null towards the general direction of the reflection sources, pointing a null to reduce interference is common practice in the art. It would have been obvious to do so in the invention of DeBell as modified in order to achieve conventional advantages with no new or unexpected results.

26. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell in view of Lightfoot as applied to claim 26 above, and further in view of Jain et al. (5,608,407).

DeBell as modified does not explicitly disclose the claimed separation of ground and object reflections based on Doppler shift, however this is well known practice in the art, exemplified by Jain (column 3, lines 37-42). It would have been obvious separate ground and object returns in the method of DeBell as modified in order to achieve conventional advantages with no new or unexpected results.

27. Claims 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 2 above.

Claims 29 and 30 are indefinite (see 35 U.S.C. 112, second paragraph rejection above), however as best the claims can be understood, the claims appear to describe well known practice in the art. It would have been obvious to implement them with the method of DeBell in order to achieve conventional advantages such as reducing error and tracking multiple targets with no new or unexpected results.

28. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Zuta (6,278,409).

DeBell does not explicitly disclose wire detection. Zuta discloses a wire detection method for an aircraft, including estimating the horizontal orientation of the wire as the normal to the azimuth to the reflection point (column 7, line 46-column 8, line 58). It would have been obvious to modify DeBell to include wire detection as taught by Zuta in order to aid a pilot in avoiding wires (DeBell column 1, lines 17-39).

29. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 1 above, and further in view of Kennedy (4,737,788).

Regarding claim 39, Kennedy discloses the claimed detecting of suspended wires based on normal impingement of a beam, and discriminating wires from other objects (See Figure 1, column 5, lines 18-41).

Regarding claim 40, Kennedy discloses that discriminating wires from other objects is based on a discontinuity of backscatter in the elevation plane when no backscatter comes from elevations below the wire's reflection point, as Kennedy only receives returns in the elevation plane (column 1, lines 5-16).

It would have been obvious to modify DeBell to include wire detection as taught by Kennedy in order to aid a pilot in avoiding wires (Kennedy column 1, lines 23-30).

30. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBell as applied to claim 53 above, and further in view of Haupt (4,555,706).

DeBell discloses a monopulse radar system but does not explicitly disclose antenna details, specifically that the antenna has a steerable null common to both sum and difference lobes. Haupt discloses the claimed antenna (column 3, lines 4-31). It would have been obvious to use the antenna of Haupt in the system of DeBell in order to achieve reduced interference and improved performance (See Haupt, column 1, lines 31-45).

***Allowable Subject Matter***

31. Claims 20-22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

32. Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome the objection(s) set forth in this Office action.

33. Claims 41-43 are allowed.

34. Claim 44 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.

***Conclusion***

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art relates to aircraft and obstacle avoidance radar systems.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew M. Barker whose telephone number is (571)272-3103. The examiner can normally be reached on M-F, 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)272-6979. The

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fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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